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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,045

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Venkat Selvamanickam

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EXAMINER

TALBOT, BRIAN K

ART UNIT

PAPER NUMBER

1762

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/816,045

Applicant(s)

SELVAMANICKAM ET AL.

Examiner

Brian K. Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23,25-33,39 and 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23,25-33,39 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/23/07 has been entered.
2. The amendment filed 4/23/07 has been considered and entered. Claims 24 and 34-38 have been canceled. Claims 1-23,25-33,39 and 40 remain in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. In light of the response filed 4/23/07, the 35 USC 112 second paragraph rejection over claim 8 has been withdrawn.

Claim Rejections - 35 USC § 103

5. Claims 1-14,22,23,27-33,39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous

Coated Conductor Fabrication by Evaporation” in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061.

Ignatiev et al. (2004/0016401) teaches a method and apparatus for forming a superconductor material on a tape substrate. The invention uses a pay-out reel and take-up reel to dispense and spool the tape. The process utilizes a reaction chamber for cleaning the substrate, applying buffer layers and applying superconductor layers (abstract). The tape (408) should be cleaned and free of grease and other contaminates. A vapor degreaser or cleaner can be used in the pre-clean stage. Alternatively a mechanical cleaner or ultrasonic bath can be utilized. Initialization stage pre-heats and or pre-treats the tape (408) (col. 3, [0031] – [0033]).

R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" teaches a continuous reel-to-reel deposition of oriented buffer layers and RBCO-superconductor. In a first step, a high temperature steel tape is electropolished and cleaned at a speed of 5-10 m/h to remove defects and to provide a surface finish (rms of less than 1.5 nm). Subsequently a MgO buffer layer is grown at room temperature using ISD and then a superconductor layer of RBCO is applied epitaxially. A final sputtering step of applying a gold/silver layer to the superconductor layer is disclosed. The T_c is 77K.

R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" fails to teach the claimed pretreatment of “mechanical waves”.

Ignatiev et al. (2004/0016401) teaches cleaning a substrate prior to applying buffer and superconductive layers including an ultrasonic bath.

Therefore it would have been obvious at the time the invention was made to have modified R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" by

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substituting one well known precleaning treatment (ultrasonic waves) for another (electropolishing) as evidenced by Ignatiev et al. (2004/0016401) with the expectation of achieving similar success.

Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) fail to teach utilizing a plasma pretreatment as well.

JP 02-118075 and JP 02-118,061 both teach advantages associated with plasma cleaning a substrate (in this case another superconductive layer) prior to forming a second superconductive layer to remove contaminants and improve adhesiveness between the layers (abstract).

Therefore it would have been obvious at the time the invention was made to have modified Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) process by incorporating a plasma pretreatment as evidenced by JP 02-118075 and JP 02-118,061 with the expectation of improving the adhesiveness between the substrate and the superconductive coating.

With respect to claims 2-6,9 and 10 the claims recite sound waves, water medium, frequency of the waves and reel speed. It is the Examiner's position that these features are all "result effective" variables that are optimized through routine experimentation of a practitioner in the art. Absent a showing of unexpected results regarding these features, it is the Examiner's that it would have been obvious for one skilled in the art to have selected the claimed features with the expectation of achieving similar success.

With respect to claims 11-13, the claims recite a polishing step. The art teaches cleaning and polishing as viable pretreatment steps and one skilled in the art would have had a reasonable expectation of achieving an additive effect by utilizing more than one conventional precleaning step to produce a "clean" substrate.

6. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 still further in combination with Goyal et al., "Processing of High Temperature Superconductors".

Features described above concerning Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 are incorporated here.

Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 fail to teach a biaxially textured buffer layer of a superconductor layer being applied by IBAD.

Goyal et al., "Processing of High Temperature Superconductors" teaches a biaxially textured buffer layer of a superconductor layer being applied by IBAD deposited on polished steel substrates (abstract).

Therefore, it would have been obvious at the time the invention was made for one skilled in the art to have modified Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 process by forming a biaxially textured buffer layer of a superconductor layer being applied by IBAD as evidenced by Goyal et al., "Processing of High Temperature Superconductors" with the expectation of achieving similar success.

Claims 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 further in combination with Glowacki et al. (6,251,834).

Features described above concerning Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 are incorporated here.

Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,06 fail to teach the claimed pretreatment step of annealing.

Glowacki et al. (6,251,834) teaches improved substrate from growing superconducting oxide materials whereby the substrate is pretreated by an annealing procedure (col. 2, line 40 – col. 3, line 30).

Therefore it would have been obvious at the time the invention was made to have modified Ignatiev et al. (2004/0016401) alone or R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) further in combination with JP 02-118075 and JP 02-118,061 process by substituting one well known precleaning treatment (annealing) for another (electropolishing/ultrasound waves) as evidenced by Glowacki et al. (6,251,834) with the expectation of achieving similar success.

Response to Amendment

7. Applicant's arguments with respect to claims 1-23,25-33 and 39-40 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that the combination of prior art fails to teach or fairly suggest using a plasma pretreatment on a metal alloy substrate and applying a buffer layer thereon before a superconducting layer.

R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al. (2004/0016401) both teach forming buffer layer on a metal alloy substrate prior to applying a superconducting layer thereon.

Regarding the plasma cleaning of the metal alloy substrate, both R. Nenetschek, et al., "Continuous Coated Conductor Fabrication by Evaporation" in combination with Ignatiev et al.

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(2004/0016401) teach cleaning a metal alloy substrate (ultrasonic bath/electropolishing) prior to applying buffer and superconducting layers. Applicant acknowledges the fact that references to JP 02-118075 and JP 02-118,061 teach treating a superconducting layer with plasma prior to applying another superconductive layer. It would be the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of similar success regardless of whether the subsequent coating was a buffer layer, a semiconductive layer, a superconductive layer or another coating layer. Applicant has not refuted this position with evidenced only gleaned in the superconductive art which would not also be gleaned from the other coating areas, i.e. critical current, critical temperature, etc. Improved adhesion would be achieved across the various coating processes.

The German reference DE 4228551 is supplied here to support the Examiner's position that pre-cleaning or "treating" a metal alloy substrate with plasma is conventional in the art and would entail obtaining the benefits associated with its use, i.e. a "cleaned substrate" for subsequent coating thereon regardless of the type of substrate and coating utilized.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Brian K Talbot
Primary Examiner
Art Unit 1762

BKT